of one large one and several smaller ones, IV imbricated and III as a rule in part faintly, the whole with a few spinelike hairs; cornicles very short, tuberculiform; rostrum reaching from somewhat beyond metacoxa nearly to end of body (relative length, like that of antennæ, varying as in the other two species); legs stoutish and armed with spinelike hairs, anterior tibiæ .1540–.1925 mm., intermediate tibiæ .1694–.2079 mm., metatibiæ .2156–.2387 mm.; length of body .4620–.8470 mm., width across widest part .2618–.4004 mm.

A. prunifoliæ is the first of the three to begin hatching, and in Virginia it may begin as early as the middle of March. The other two follow in about ten days to two weeks.

MYRIAPODS FROM NASHVILLE, TENNESSEE.

By Ralph V. Chamberlin,
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The myriapods listed below are represented in a collection made by Mr. Harold Cummins of Vanderbilt University in and near Nashville and by him kindly sent to me for study. The collection is interesting particularly because it includes numerous well preserved specimens of a new diplopod genus of the family Nannolenidæ. Three other forms represent new species, two of Fontaria and one of Parajulus. There is a total of twenty-five species.

Chilopoda.

1. *Geophilus mordax* Meinert.

Two specimens taken in the Glendale Hills south of Nashville, one on Oct. 14, 1916, and one in March, 1917.

2. *Arenophilus bipuncticeps* (Wood).

One specimen labeled as found on "Nolensville Pike, Nashville, Feb. 25, 1917," and another labeled "Nashville, Nov., 1917."

3. *Gnathomerium umbraticum* (McNeill).

One specimen taken in the Glendale Hills in April, 1917.

4. *Theatops posticus* (Say).

Glendale Hills. One specimen taken May, 1917, and one March 25, 1917.

5. *Otocryptops sexspinosus* (Say).

Seven specimens of this abundant and widespread species. Four from Glendale Hills taken March 25, April 21 and in May, 1917; and three specimens taken beyond Glendale Oct. 14, 1916.

6. *Hemiscolopendra punctiventris* (Newport).

One specimen, Glendale Hills, April 21, 1917.

7. *Sozibius providens* (Bollman).

Glendale Hills, April 21, 1917. One specimen.

8. *Lithobius mordax* Koch.

Several specimens. One pair were taken "around pond between Gallatin and Nolensville Pike," March 14, 1917. A second pair at Belle Meade, Jan. 28, 1917.

9. *Lithobius transmarinus* Koch.

Several specimens of this form taken south of Nashville, Oct., 1916.

10. *Bothropolys multidentatus* (Newport).

Glendale Hills, April 21, 1917. One male.

11. *Scutigera forceps* (Rafinesque).

Nashville, May 6, 1917. One adult specimen taken "under a flat stone on a rather barren hillside."

Diplopoda.

12. *Platydesmus lecontei* (Wood).

Beyond Glendale, Oct. 14, 1916. Two specimens.

13. *Callipus lactarius* (Say).

Numerous specimens. Beyond Glendale, Oct. 14, 1916; south of Nashville, Nov., 1916; Nashville, March 25, 1917; and Glendale Hills, April, 1917.

14. *Cleidogona cæsioannulata* (Wood).

Beyond Glendale, Oct. 14, 1916. One specimen.

15. *Cambala annulata* (Say).

Nashville, March 25, 1917. One specimen.

Choctella gen. nov.

A Nannolenid genus which has the usual form and proportions of Spirobolus.

Mandibular combs 7.

Gnathochilarium as in Nannolene and Epinannolene.

Ocelli in several series, arranged in a triangular patch.

Repugnatorial pores beginning on the sixth somite, each pore in front of the transverse suture of the somite.

Antennæ short, composed of 7 articles of which the fifth and sixth are clavately enlarged.

Second and third articles longest, subequal; fourth, fifth and sixth but little shorter, subequal. Head below eyes deeply subvertically grooved, for the reception of the proximal portion of antennæ.

Dorsal plate of first somite large, extending forwards on a portion of head and largely concealing the antennæ.

First and second legs in male reduced in size but armed and otherwise similar to the succeeding pairs.

All somites excepting the first and last strongly longitudinally striate beneath and almost half way up to the repugnatorial pore, elsewhere smooth.

Posterior border of last segment above rounded, exceeded by the anal valves. Mesal edges of anal valves meeting in a distinct groove.

Gonopods well exposed. Gonopods two pairs, coleopods and phallopods respectively, the seminal duct traversing the latter.

Each coleopod simple, thin, plate-like, and undivided.

Phallopods also undivided.

Genotype: *Choctella cumminsi* sp. nov.

16. **Choctella cumminsi** sp. nov.

The general color below is black excepting the caudal, overlapping border of each somite. Dorsally the somites remain dark in a more or less narrow band adjacent to this pale posterior border elsewhere bearing greyish yellow or more typically in part reddish, the color rather irregular in arrangement. Ordinarily the light markings of the dorsum are less extensive anteriorly than elsewhere, the caudal segments also in some being similarly darker than the middle ones. Head in general greyish black. Labrum

and adjacent region of head and narrow borders of first somite also reddish. Antennæ blackish. Legs dusky reddish brown. Anal valves reddish brown along their contiguous mesal margins.

Body Spirobolus-like in general form and appearance. Of uniform diameter throughout excepting the first few and last few somites. Surface in general appearing smooth and shiny but each somite excepting the first and last marked below on each side with a series of strong longitudinal striæ which do not extend up on the sides, the striation extending farther dorsad caudad of the suture than in front of it.

First repugnatorial pore on the sixth somite. Pores large, each in front of and well removed from the transverse suture.

Head with a pronounced vertigial sulcus connected from its anterior end to each eye by means of a finer transverse sulcus. Below this the surface is roughened by singular sulci which are more prominent laterally, but the smooth antennæ short, clavate, with the first two articles normally lying in a deep groove in front of and below the eye; first four articles sparsely hairy, the remaining ones densely clothed; sensory cones pale, distinct.

Eyes black, triangular, transversally-elongate; ocelli in 5 or 6 series; 30 to 40 in number. Setigerous foveolæ 3 + 3.

Plate of first somite large, extending over head to the transverse suture betweens eye and normally covering greater part of antennæ. Anterior margin curving broadly moderately forward on the sides, the lower anterior corner evenly rounded, the caudal corner projecting somewhat caudad and more narrowly rounded. The lower anterior and the ventral border elevated and set off by a suture, which does not extend across mid-dorsal region. No other distinct sulci.

Last somite a complete annulus much larger above than below with the caudal dorsal margin evenly rounded and surpassed by the anal valves. Anal valves ventrally smooth.

Seventh somite in male moderately produced below. Genopods well exposed. Coleopods simple, thin plates, each of which is moderately narrowed distad and narrowly rounded at the apex; below apical portion the mesal border of each is bent subcaudad. Phallopods exceeded by the caleopods. Each with distal division narrowly subconical, distally curving mesad, the tip somewhat obliquely truncate.

Number of somites 44 to 48.

Average length near 50 mm. with diameter 4.8 mm.

Localities. Glendale Hills, south of Nashville. Nine specimens April 21, 1917 and three specimens March 25, 1917.

17. *Parajulus pennsylvanicus* (Wood).

Beyond Glendale, Oct. 14, 1916. One female apparently this species.

18. Parajulus nigrans sp. nov.

The color is very dark, blackish throughout without definite paler spots or annuli. Feet also dark.

Body rather slender, obviously narrowing caudad. In general smooth, not pilose, but a few stiff, somewhat curved setæ on last segment and anal valves. Somites strongly longitudinally striate beneath and across lower part of sides.

First segment long, with the lower margin straight; margined below and over lower part anteriorly but not at all striate.

The anal plate above is acute but is not at all produced; it is clearly exceeded by the anal valves and bears a series of setæ along its caudal margin. Anal valves mesally margined.

Head with a median vertigial sulcus ending at a deeply impressed arcuate transverse sulcus extending between the eyes. Nearly smooth. Eyes triangular, each composed of about 36 ocelli arranged in 8 transverse series.

Repugnatorial pore moderate, contiguous or nearly so with the suture which is straight or rarely very slightly curved opposite the pore.

In the male the mandibular stipes strongly produced at the antero-inferior angle, the apex of the process being on nearly the same level as the inferior margin of the labrum.

Each first gonopod of the male is placed antero-lateral of the corresponding second one. Its anterior division is a flat plate about half as high as the posterior division against which it lies; its distal end is rounded. The second or posterior gonopods rise clearly above the anterior plates. Each above its base is a thin, flat blade with edge subapical, which near its middle curves caudad and then somewhat dorsad. Not at all narrowing dorsad, its free distal end truncate; from the basal portion a slender acutely pointed blade curves mesad and crosses the one from the other side.

Number of somites 51.

Length near 30 mm. Width at anterior end 2 mm.

Locality. Near Nashville. "Under stones in juniper patch near Nolensville Pike." Feb. 19, 1917. One male.

19. *Spirobolus marginatus* (Say).

One specimen taken in the Glendale Hills, April 21, 1917.

20. *Polydesmus canadensis* Newport.

A number of specimens of both sexes. Belle Meade, Jan. 28, 1917. Nashville, Feb. 25, 1917, and April 26, 1917 "under stones in a damp spring house." Glendale Hills, April, 1917.

21. *Polydesmus moniliaris* Koch.

Three specimens from the Glendale Hills, April, 1917.

22. *Euryurus erythropygus* (Brandt).

Eight specimens, four from "beyond Glendale," Oct. 14, 1916, and four from Glendale Hills, April, 1917.

23. *Fontaria tennesseensis* Bollman.

Glendale Hills, April 21, 1917. Two adult and two immature specimens.

24. **Fontaria glendalea** sp. nov.

Dorsum and head shining brownish black with the lateral carinæ alone yellow in the preserved specimen. Antennæ dark reddish brown. Legs yellow.

Body distinctly narrowing forward in male over the first four somites. Lateral carinæ large, in middle region posterior margin straight, transverse or nearly so, the ectocaudal angles in posterior plates moderately extended caudad. Surface to naked eye appearing smooth, under lens seen to be finely corrugated.

Repugnatorial pore on dorsal side of carina from the ectal edge of which it is well removed.

Vertigial sulcus of head deep. Head smooth. Occipital foveolæ 2+2, the clypeal 1+1.

In the male the caxæ of legs without processes. The sternites also without processes excepting a pair of contiguous subconical ones on the fourth somite, these being flattened anteroposteriorly. Genital processes of second somite short, cylindrical, distally truncate.

Basal lobe of each gonopod strongly setose on mesal side. Exterior division with setæ on posterior edge over basal and middle region; the branchis constricted above here into a slender blade of uniform width until the next to the distal fifth of length over which it is expanded to nearly double the width and then again narrows to a tongue which at its distal end is attenuated into a slender, distally bristle-like tip. About the distal three-fifths, or less, of the exterior blade is strongly bent upon itself roughly into a U-shape, with the slender tip at right angles to the arm bearing it. The basal spine short, slight, curved, acute.

Length about 39 mm. Width 10 mm.

Locality. Glendale Hills, south of Nashville, April 21, 1917.

Two adult males, one adult female and four immature individuals. Closely related to *F. rileyi* Bollman, described from Macon, Georgia.

25. **Fontaria mimetica** sp. nov.

General color at present dusky brown with the carinæ and borders of somites yellow. Of reddish caste and probably red in life. The posterior band of color usually widest at middle. The first somite with anterior as well as posterior border of the lighter color. Head light at sides and below level of antennæ. Antennæ deep reddish brown or chestnut. Legs yellowish.

Body conspicuously narrowed cephalad over the first four somites. Carinæ very much as in glendalea but with the caudal angles in general more produced.

Repugnatorial pore dorsal in position, widely removed from lateral edge.

Vertigial sulcus distinct. Occipital foveolæ 2+2; antennal and clypeal 1+1.

Sternite of third somite in male with two processes fused into a single conspicuous median body which is somewhat constricted at base. Fourth sternite with two separate subconical processes. Coxæ without spiral process aside from those giving exit to the genital ducts on the second pair.

Fifth sternite with two low, rounded eminences.

The general form of the gonopods as in glendalea, strongly coiled nearly into a complete circle open below, but the exterior division much broader, at first cylindrical, then flattened and near

end of middle third of length narrowing to a much narrower blade which distad expands a little, somewhat clavately, the end being rounded, with no acute or spine-like process. Basal spine short and stout, at tip subconically narrowed, the apex narrowly rounded.

Length near 42 mm. Width 10 mm.

Locality. Glendale Hills, south of Nashville. April 21, 1917.

One male.

Hillsboro Hills, Nashville, April 22, 1917. One female apparently of this species.

Also "Beyond Glendale," Oct. 14, 1916. One male and an immature specimen. The male is not in full color, the brighter carinal and marginal markings being scarcely evident. The general color is dusky over a dull yellow background. A dark median longitudinal dorsal line shows posteriorly. It appears to be a recently moulted individual.

NOTES ON DIPTERA.[1]

By J. M. Aldrich.

(a) In studying the habits of the "salt-fly" of Great Salt Lake (*Ephydra gracilis* Pack.) in 1911, I noted that trains crossing the lake on the famous Southern Pacific cutoff west of Ogden raise a constant swarm of these flies for an hour, and many of the insects get into passenger trains in spite of efforts to keep them out by closing the windows. My report says (Jour. N. Y. Ent. Soc., xx, 84, 1912), "They become a nuisance . . . in the dining cars. I had no difficulty in finding some of the flies in the latter situation as far west as Reno, Nev., and I doubt not that they may be found after the cars reach Oakland."

I can now add that the species has established itself in San Francisco Bay. On July 10, 1917, in sweeping about several little saline pools close to the shore of the Bay next to Palo Alto, I captured 18 specimens, indicating that it is a common species 30 miles south of the Oakland mole. I had no opportunity to examine other portions of the Bay shore.

Prior to the running of trains across Great Salt Lake, which

[1] Published by permission of the Chief of the U. S. Bureau of Entomology.